



Minutes of the Fall 2018 ILRS ASC Meeting

Sunday, November 4, 2018, Mt. Stromlo, Australia, 8:30 – 17:00

Operational products: status reports and future plans

All ACs & CCs with brief reports on key issues.

ASI:

- Standard products are running smoothly both as single AC submission and CC submission. Some remarks on the combination products:
 - The daily JCET solutions still show a much lower 3D WRMS of the coordinate residuals with respect to the other ACs and to the JCET weekly time series. Similar issue in the scale to ITRF2014 because it is close to zero and it is smaller also in the weekly solutions. Higher values of the along track residuals RMS for LAGEOS-2.
 - DGFI is not providing daily (v170) and weekly (v70) solutions since September 23rd. Furthermore their weekly orbit solutions show higher and more scattered values of the radial, cross-track and along-track residuals RMS for Etalon-1 and Etalon-2 with respect to all the other ACs.
- Systematic error estimates:
 - The single AC time series were combined to produce a range bias time series.
 - 107 station time series were plotted and checked.
 - A preliminary range bias table is ready and has been used to make an ITRF-like ASI solution.
 - An open issue is the range bias difference between LAGEOS and Etalon.

BKG:

- Contribution to the systematic error PP.
- Trying to derive Etalon orbits for 1993-1999.
- LARES as 5th satellite: development of operational procedure ongoing.

DGFI:

- Revised version of the DOGS-OC and DOGS-CS SW used for the operational products.
- T2-L2 derived time bias application for LAGEOS, Etalon, LARES and LARETS. LOD not affected, minor effects on the pole. The amplitude of Xp-differences is double for the LEO satellite than for L1/2, for Yp is 2-4 times larger than L1/2. Effects on site coordinates to be checked.
- Study on the different IERS mean pole models. The impact on the coordinates depends on the geographical location. Maximum effect 2 mm in 10 years in the height (e.g. Wettzell). The impact on the EOP is minimal on LOD.

- Various HF-EOP models available in the SW but not validated.
- DGFI will soon restart to deliver the SP3 orbits as standard products for ILRS.
- DGFI is able to contribute to the next ASC pilot projects: low degree SH of the gravity field, inclusion of LARES, expansion to more targets used in the operational products.

ESA:

- None attending.

GFZ:

- None attending.

NSGF:

- Gravity field estimation started at NSGF. First comparison with DGFI.
- CoM modeling:
 - o Work completed for 6 satellites: LAGEOS, LAGEOS-2, LARES, Etalon, Starlette, Ajisai. The CoM tables are in the old format but the format will change in future.
 - o LAGEOS: new system configuration, corrected errors caused by system log ambiguities and miscommunication with stations, new modeling for multi-photon stations.
 - o Major changes for Etalon and Ajisai, minor changes for LARES and Starlette.
 - o Overall tendency is toward lower CoM, which means higher site height.
 - o The new CoM affects by 0.6 ppb. Range biases don't disappear.
 - o LAGEOS and LAGEOS-2 are geometrically identical but optically different. LAGEOS has higher return rate. The CoM corrections are different for the two LAGEOS, up to 0.75 mm.

JCET:

- Operational products routinely delivered and ACs solutions combined and checked.
- Quarantined sites: 4 sites undergoing validation, 2 engineering sites that have yet not submitted data. San Fernando is going down (**Note added AFTER the meeting: Manuel Catalan of the SF team reported during the workshop that the old station found funding for a new laser and will resume operations soon!**).
- SSEM Project:
 - Results available online on the JCET website. Some DGFI R_B solutions are really noisy. ESA time series has R_B often higher than the other ACs
 - Site selection for the project: some station have sporadic data and no need to include them in the bias analysis and in the ITRF time series. As soon as the ASC agrees on the proposed list of stations to delete, the list will be included in the data handling file.
 - At the next step, some additional events may be introduced after discussion with the stations.
- Network weather forecast, taken from Weather Underground, available online.
- Pressure error at Wettzell, 1 hPa offset, starting from mid 2012. The data will be corrected by the station and resubmitted to the data centers.
- DGFI test series with the new s/w. The solution seems to have more stable coordinate estimates and generally more stations included in the solution with respect to the old solution.
- Etalon tracking campaign proposal in 2019, from February to April. The most productive stations will be involved (13 stations).
- Visibility charts online at JCET.

WUELS/Sośnica:

Core stations for ITRF. Check on the coordinate stability during years 2010-2018, at 10 mm and 15 mm levels.

Ricklefs: CPF v2 and CRD v2 formats. The implementation schedule foresees the stations to use the new CPF v2 by December 2019 and to produce the CRD v2 by June 2020.

Operational Products

- New CRD format: JCET, ASI and DGFI will contribute to testing it.
- The full reanalysis with the old models used for the development of ITRF2014 and ITRF2014 as a priori will not be done, given the fact that we will have a full reanalysis with ITRF2014 as a priori (in early 2019), using the new model for the CoM corrections and adjusting for systematics simultaneously with pos+vel, plus being a lot closer to the new standards of analysis.

Planning for the development of the next ITRF

- Pilot Project: Inclusion of LARES as a 5th satellite in our operational product development and estimation of low-degree SH of the gravity field solving for a 6x6 gravity field. All ACs are requested to process 2017 with 5 satellites data set. No estimation of biases. Time series to be submitted by the **March 1, 2019**. The SH parameters will be included in the SINEX file.
- The plan is to have the single AC time series at the end of 2019.
- Combination will start in 2020. The CCs estimate to have 6-8 months to complete the process. The year 2020 will be included before submitting the official ILRS time series.

Station Systematic Error Monitoring Project — The Operational Phase

- New CoM tables will be available by **November 20, 2018** (AI Rodriguez). **NB: Emailed on November 15**
- The data handling file will be updated by **November 20** (**more likely by early 2019, see reason below**) keeping only the engineering R_B that will be used for the new AC time series. T2L2 timing errors will also be included in the data handling file (AI Pavlis/Luceri). **NB: Alexandre Belli will deliver 2017 & 2018 (up to ~April) T2L2 data in early 2019**
- ACs will submit the series 1993-2018 by **January 31, 2019**.
- The combination and the NEW data handling file will be available by the end of February so that the operational phase can start by **March 1, 2019**.

The Journal of Geodesy Special Issue on Laser Ranging—JOGSILR Status

11 articles accepted, 8 additional manuscripts under review and a small number to be submitted.

Next meeting:

At the EGU in Vienna, Saturday April 6, 2019

APPENDIX

I. SUMMARY of ACTION ITEMS:

AI No.	Responsible Entity	Action Item Description
1	JCET	Reconcile the DAILY-product scale with that of the WEEKLY series
2	ESA	Implement the new format for multi-wavelength bias labels (SOLN field) and revise your v220 series to improve agreement with the other ACs
3	DGFI	Using the new DOGS s/w and the new CoM model regenerate the v220 series for separate LAGEOS 1 & 2 biases and combined Etalon 1 & 2 bias, to improve agreement with the other ACs
3	ALL ACs	If interested in contributing to the <i>GGOS/IERS Pilot Project to test various High Frequency EOP models</i> , contact epavlis@umbc.edu
4	ALL ACs	Deliver complete reanalysis of the full SLR data set since 1993 using SLRF2014, the new CoM model and allowing for all-systematics adjustment including a combined bias for the two ETALONS, by the end of January 2019 .
5	ALL ACs	Deliver a test series including all weekly SINEXs of 2017 reanalyzed with the inclusion of LARES data and the estimation of a 6x6 set of gravitational harmonics by March 1, 2019 .

II. ASC List of Attendees, Fall 2018 ASC Meeting, Mt. Stromlo, Australia

Sunday, November 4, 2018, 08:30 – 17:00

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